

PROJECT FACT SHEET

The Heart of the Matter: Cardiovascular disease at the cellular level

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Cardiovascular disease is the leading cause of death in Canada. In 2000, heart disease was responsible for 2,800 deaths in Nova Scotia alone. With a total annual cost of approximately \$18.5 billion, cardiovascular disease, a major cause of heart attacks and strokes, place the greatest strain on our national health care system.

Atherosclerosis, commonly known as hardening of the arteries refers to deposits that build up in the inner lining of an artery and reduces blood flow. It is the single most significant contributor to cardiovascular disease. Researchers have long known that obesity is an important risk factor for developing atherosclerosis, but the relationship between obesity and the disease is not fully understood.

New research by a team from the Department of Pharmacology at Dalhousie University suggests that a key to unlocking the mystery might be found at the cellular level. Doctoral student Tanya McCarthy has identified and developed an *in vitro cell model* that will allow her to further explore the relationship between obesity and atherosclerosis by investigating the role chemerin plays in inflammatory processes associated with atherosclerosis.

The team found that chemerin, a cell-to-cell signaling protein, is secreted from adipose tissue, the same tissue that occurs in excessive amounts in obesity. Previous studies have shown that chemerin also affects the behaviour of macrophages, cells that play an essential role in immunity and are important mediators of the inflammatory response in atherosclerosis. The Dalhousie research team explored whether adipose-starved chemerin may have an important role in atherosclerosis.

“Chemerin is linked to macrophages,” notes Ms. McCarthy. “Consequently, chemerin signaling may play an important role in helping combat atherosclerosis.”

Now that Ms. McCarthy has identified an *in vitro* model further research can be done to understand the effect of chemerin and, ultimately, the link between obesity and atherosclerosis.

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